

DOE R&D Conference



Form and Functionality

Fred Maxik

Tampa, 2014

My Story



Analog to Digital

1877 – Grooves on Wax Cylinders

1880's – First Moving

1920's – Talking Films

1930's – Magnetic Tape

1980's – Optical Disk

2000's – Microchip, Flash

2010's – Streaming Digital



Mass

NEW FORM



Smartphones
Wifi, Digital
Audio, Streaming
Movie

Function

1870's

1960's

1980's

2000's

2020's

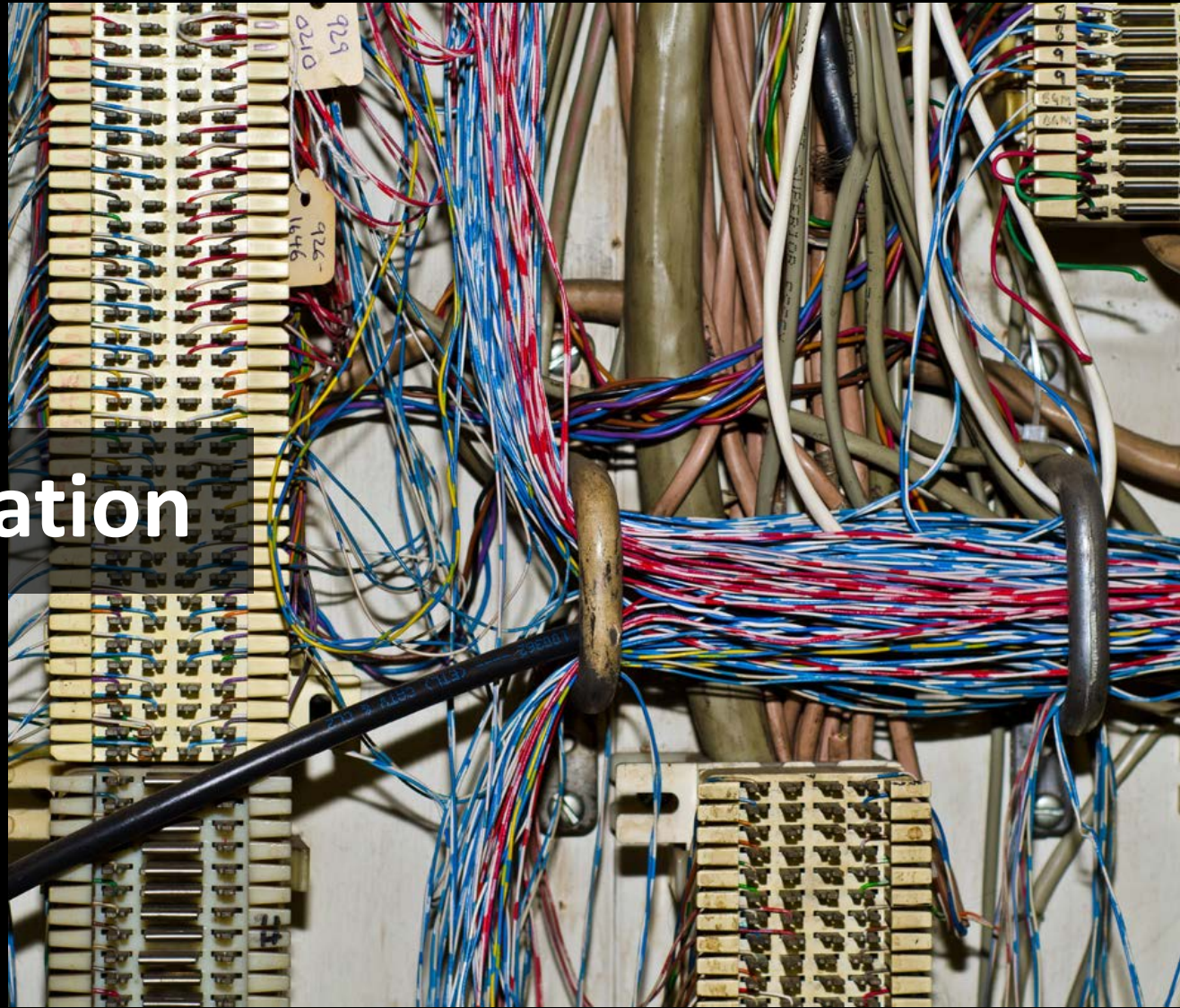
Light is no longer the absence of darkness



- Dematerialization
- Functionality
- Spectral Control



Dematerialization



Evolution of Street Lighting









Functionality



Sensing





Light & Biology

Spectral Component of Light



- Circadian Rhythms
- Plant Growth
- Animal biology
- Applications of Spectrum Specific Lighting



Biological Functions



Agricultural Functions



Urban Farming



Propagation Research



Indoor Hobby Gardening



AgroTech Research



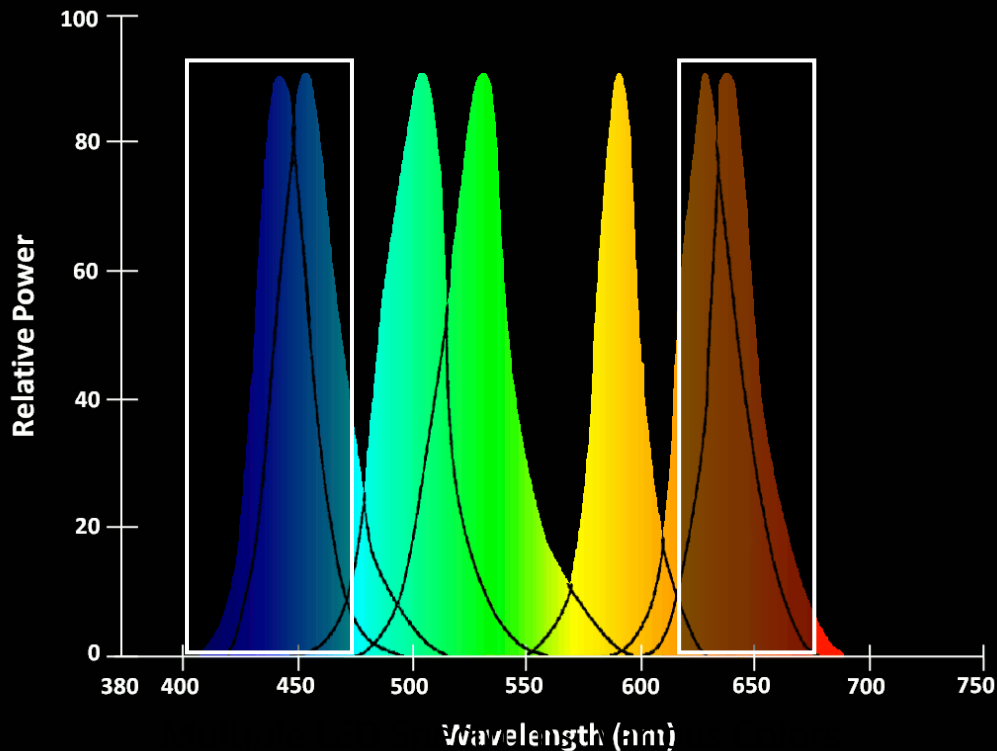
Hydroculture Farming



Floriculture Industry

Applications of Spectrum Specific Lighting

Highest rates of photosynthesis: between 400-480nm and 620-680nm



- Plant lighting
 - Incorporate wavelengths that increase photosynthesis and photomorphogenesis in gardens and greenhouses

Because life is color.





Why does it matter?





MAXIK
LABS